



Combat Equipment and Support Systems
PM, Infantry Combat Equipment
Marine Corps Systems Command
Quantico, VA 22134

New Equipment Training
Modular Tactical Vest (MTV)

INSTRUCTOR GUIDE

TERMINAL LEARNING OBJECTIVES

1. Explain the fundamentals of body armor and the two armor systems included in the MTV (Hard Armor Plates and Soft Ballistic Inserts).
2. Demonstrate the proper procedures for assembling, wearing and doffing the Modular Tactical Vest.
3. Demonstrate the proper procedures for caring for the Modular Tactical Vest.

ENABLING LEARNING OBJECTIVES

1. Explain the function of armor and the basics of how armor systems defeat ballistic threats.
2. Explain the two armor systems (hard and soft armor) and how they function together.
3. Discuss the features of the MTV.
4. Demonstrate the assembly procedures for MTV and adjusting the fit.
5. Demonstrate the procedures for adjusting the hard armor plate for proper positioning.
6. Demonstrate the procedures for doffing the MTV in an emergency situation.
7. Discuss the safety concerns for the MTV.
8. Explain the procedures for cleaning, storing, and transporting the MTV.
9. Explain the procedures for inspecting and conducting repairs to the MTV.

Inform class that there is a training aid (Kwikpoint) located inside the rear SAPI plate pocket. This Kwikpoint instruction card demonstrates the assembly procedures, use and care, and other pertinent info for the MTV.

ELO# 1. **Explain the function of armor and the basics of how armor systems are categorized.**

It is important to understand the function of armor and how this armor can defeat ballistic threats if worn and maintained properly.

- a. The primary function of Body Armor is to protect the wearer from ballistic threats. Ballistic threats can be either fragmentation, as from bursting munitions, or projectiles fired from handguns or rifles. Different types of armor are required to defeat the various threats and their associated velocities.
- b. There are several methods to categorize ballistic threats and the armor required to defeat them. Most recognized is the National Institute of Justice (NIJ) Armor Rating System. This system was developed mainly for the Law Enforcement Community and has little application to the threats facing the US military. Most threats listed in the NIJ system are handgun threats and do not encompass any bursting munition threats such as IED's, hand grenades, or mortar fire. In response to the needs of the US military, most armor is procured based on specifications built around the Defense Threat Reduction Agency (DTRA) models of worldwide arms proliferation. These threats are considered when developing armor for today's military.

ELO# 2 **Explain the two armor systems and how they function together.**

Instructor note: Instructor will have a demo of each component. It is important for the class to be able to distinguish between SAPI and ESAPI for example.

The armor you are issued is a combination of two primary systems. The first system component is the soft ballistic inserts. The second system component is the Hard Armor Inserts.

- a. The soft armor inserts of your body armor are designed primarily to defeat fragmentation threats but also is capable of defeating 9mm handgun threats as well. The soft armor inserts are developed using ballistic fabric such as Kevlar KM2, Twaron, and SpectraShield.
- b. The hard armor inserts, also known as SAPI (Small Arms Protective Inserts), provide protection up to NATO 7.62mm M80 ball. Newly developed E-SAPI (Enhanced Small Arms Protective Inserts) can provide protection up to 7.62mm APM2, armor piercing rounds. Also recently developed and fielded is the Enhanced Side SAPI, this 6X8" plate will stop 7.62mm APM2. These plates are developed using a ceramic core backed with a pressed ballistic fiber backing.
- c. **NOTE: These hard armor inserts must be worn in conjunction with the above listed soft armor inserts in order to be effective. The hard armor inserts will not provide sufficient protection when worn alone.**

ELO #3. **Discuss the features of the MTV.**

Instructor note: Have the students place their MTV in front of them so they can follow along with the features.

- a. Side Opening Vest. At first glance you will notice that the MTV is a side opening vest. Your current issue OTV is a front opening vest. A side opening vest eliminates the chance of the vest falling open due to heavy loads carried on the vest in conjunction with worn out Velcro closures. The side opening vest also eliminates the possibility of a gap in armor coverage.
- b. Integrated/Adjustable Side Plate Pockets. You will also notice that the side plate pockets are integrated into the cummerbund so that they will not become separated from the vest. These pockets are also adjustable. After deciding the exact position for each Side SAPI pocket they can be attached in the desired location and secured with the strap sewn onto the cummerbund. This also provides a redundant system of keeping the pocket PERMANENTLY attached to the vest. Each pocket can be shifted from side to side and/or up and down. This enables the user to adjust the plate pouch to their needs.
- c. Quick Release Mechanism. The MTV is equipped with a quick release handle that enables the user to quickly doff the vest in an emergency situation. This quick release handle can be mounted on the left or right side and can be mounted at the top or the bottom of the cummerbund.
- d. Adjustable Shoulder Straps. The adjustable shoulder straps enable the user to manipulate the vest up or down based on user preference. This adjustment is limited due to optimal placement of the front and rear SAPI plates. Also each vest has a stop sewn into the shoulder strap. This stop prevents the Marine from over adjusting his/her vest and opening a gap in the soft armor.
- e. Increased Area of Coverage. If you will notice the new MTV has additional kidney/spine ballistic protection in the back of the vest. This additional protection significantly increases the area of coverage for the MTV versus the Outer Tactical Vest. This armor panel can be removed and the pocket stored when not in use.
- f. Communications routing channels. Located along the top and side edges of the external front and rear SAPI plate pockets, you will find these channels. They are intended to be utilized for concealing and routing any communication lines or other tubes or hoses that may be associated with equipment mounted on the MTV.

IMPORTANT: at no time should communication lines be connected to the front and the back of the vest at the same time.

IMPORTANT: Front and Back ESAPI plate should always be worn as high as possible on the Marines body. The correct position of the front plate is NO MORE than 1" below the Sternal notch (where the collar bones join...front top of chest).

ELO #4 **Demonstrate the assembly procedures for MTV and adjusting the fit.**

a. Ensure that you have all of the correct piece/parts before beginning assembly.

1. Use the enclosed parts list to verify all parts are available.
2. **Request students to immediately notify instructors if any parts are missing**

b. Cummerbund Assembly.

1. Locate all the parts required for the cummerbund.
2. Place the cummerbund with the outside face down on the ground with the ends with the three tabs inboard facing each other. The side plate pocket openings should have the opening to the top.
3. Place the "3 hole" adapter over the white nylon tabs.
4. Pull the white tables through the grommets on the "3 hole" adapter and weave the cable through all three white tabs.
5. Determine where you want to locate the quick release handle **(I.E., TOP OR BOTTOM PLACEMENT)** and begin to thread the cable through the grommet and maneuver the cable to the corresponding opposite grommet. The cable should exit the grommet nearest the three tab side of the cummerbund.
6. Place excess cable through the nearest grommet so that it is not exposed.
7. Lace the bungee cord through one side of the cummerbund and through the "3 hole" adapter

c. Insert Side ESAPI

1. Insert Hard Armor (side ESAPI) and soft armor into side plate pocket inserts
 - i. Ensure ESAPI strike face at enemy and that soft armor is behind Side ESAPI
2. With Hard Plates and Soft Armor inserted into the side plate pocket inserts, slide the inserts into the cummerbund.
3. Close cummerbund tabs over the side plate pocket inserts.
4. If necessary attach hip pads

d. Insert Soft Armor.

1. Locate the front panel. Insert the front soft ballistic insert with the label(s) facing inside closest to the body. Ensure the panel lays flat and attaches to the Velcro sewn into the carrier. Close the Velcro opening on the vest.
2. Locate back panel.
3. Insert rear soft ballistic insert with the label facing inside closest to the body. Ensure the panel lays flat and attaches to the Velcro sewn into the carrier. Close the Velcro opening on the vest.
4. Locate and insert the groin ballistics in their appropriate place. Insert with label facing the body.
5. Locate and insert the rear drop down armor (if necessary). Insert with labels facing the body.

NOTE: Remember that the soft armor must be inserted behind the hard armor insert to be effective.

e. Join the front and back halves of the MTV.

1. Click fastex buckles on the left and right side of the MTV at the shoulders.
2. Position Velcro on top of shoulder pieces so that the neckline is continuous.

f. Insert Front and Back ESAPI plates

1. Locate flap on front and back of MTV (exterior pockets).
2. Insert ESAPI plates into the exterior pockets.

g. Adjust fit of front and back

1. Using the buddy method, place the MTV over your head.
2. Determine if shoulder adjustments are necessary.

NOTE: Front SAPI plate position should be NO MORE THAN 1 inch below the Sternal Notch (OR EVEN WITH THE COLLARBONE, FAILURE TO ENSURE PROPER PLACEMENT MAY RESULT IN DEATH). ***THIS POINT NEEDS TO BE EMPHASISED MANY TIMES THROUGH THE TRAINING SESSION. ADDITIONALLY, NEED TO STRESS THAT SMALL UNIT LEADERS ARE RESPONSIBLE FOR ENSURING PROPER FIT/PLACEMENT OF PLATES. *******

3. Have your buddy adjust your shoulder straps by loosening the Velcro and either moving the vest up or down depending on your need. Be sure to adjust both sides evenly.

h. Insert Cummerbund

1. Locate cummerbund pocket flaps on the rear of the MTV,
2. Unsnap the bottom portion of the flap.
3. Open the entire back cummerbund pocket, by lifting the top flap and then the bottom flap.
4. Place cummerbund directly on top of the opened pocket, ensuring that the quick release handle is located in the appropriate position.
5. Ensure that the side plate pockets are in the upright position.
6. Close bottom flap panel over the cummerbund.
7. Reattach the top flap by securing Velcro and snap in place.
8. Close both sides of the cummerbund.
9. Determine if adjustment is necessary.
10. Have your buddy loosen or tighten the bungee cord in the center of the cummerbund to achieve proper fit.
11. Cut and remove excess bungee. ENSURE the Marines leave 4-6 inches for adjustment.
12. Position the cummerbund stops in the proper locations to prevent the cummerbund from sliding through the channel.
13. Attach Cummerbund stops to the cummerbund.

i. Affix the Yoke/Collar Assembly into the neck opening of the MTV.

1. Ensure that the rear of the Yoke/Collar Assembly is centered properly.
2. Ensure that the yoke is lying flat around the inside of the neck opening.
3. Utilize tab attachments to properly position the yoke assembly.
4. Affix throat protector to the yoke/collar assembly.

j. Check Fit of MTV

1. Ensure MTV has no gap at side of Marine
2. Ensure ESAPI plates are worn as high as possible on the neckline.

Note: Failure to wear ESAPI plates as high as possible may result in death.

ELO #5 **Demonstrate the procedures for adjusting the hard armor plate positioning.**

The hard armor plates can be adjusted to fit the wearer. The front and back SAPI plates can be adjusted up and down. The Side SAPI can be adjusted up, down, and side to side.

- a. To adjust the front and back SAPI plates the user should utilize the shoulder strap adjustment feature. Simply unhook the Velcro tabs and adjust the fitting so that the **ESAPI PLATES** are positioned correctly on the body. The correct positioning should be no more than **one inch (1")** below the sternal notch **(OR EVEN WITH THE COLLARBONE, FAILURE TO ENSURE PROPER PLACEMENT MAY RESULT IN DEATH)**. The rear SAPI plate should be level with the front plate when viewed from the side.

NOTE: The plate positioning is critical. If the plates are not positioned correctly, serious injury could result.

NOTE: The shoulder straps have a built in stop mechanism that will not allow the user to adjust the SAPI that will achieve more than a one inch gap below the sternal notch. This stop also maintains the overlap in ballistic material required for the shoulder region.

- b. To adjust the Side SAPI plates the user should loosen the top flap, exposing the Side Plate Pouches. The pouches can be repositioned by disengaging the Velcro inside the cummerbund opening. Once the Velcro is disengaged, position the pouch in the appropriate position. Once positioned correctly, ensure the Velcro is engaged and re-secure the top flap.

NOTE: **NEED TO INSTRUCT PROPER PLACEMENT OF SIDE-SAPIS – PROPER PLACEMENT IS AS HIGH IN THE ARMPIT (AXILLARY) REGION AS THE MARINE CAN COMFORTABLY WEAR. ADDITIONALLY, SIDE-SAPI NEEDS TO BE CENTERED IN THE SIDE OF THE TORSO. AGAIN, NEED TO STRESS THAT IMPROPER PLACEMENT MAY RESULT IN DEATH.**

NOTE: Remember, the soft ballistic insert must remain behind the hard armor plate in order to be effective.

ELO #6 **Demonstrate the procedures for doffing the MTV in an emergency situation.**

Doffing the MTV is a fairly easy sequence, but since there is usually a heavy load associated with armor platforms, injury could occur if these steps are not properly followed.

The Vest is designed to require two (2) steps to quickly doff. This is intended as a safety back up. There is no way to accidentally pull the cable and have the entire vest fall away.

a. In an emergency situation the first step is to simply pull the quick release handle. This is accomplished by:

1. Release the safety by pulling the Velcro tab down.
2. Insert thumb into quick release loop.
3. Pull quick release handle across the body in a single rapid motion.
4. The cummerbund will disengage at the rear of the vest.

FOLLOWED BY:

5. Reaching up and across the body to the top of the shoulder.
6. Unsnap the Fastex quick release buckle.
7. Grasp the front shoulder portion of the MTV and pull away from body.

WARNING

Failing to detach the Fastex buckle before trying to pull away the vest will result in the full load of the MTV suddenly shifting up to the neck area causing serious neck, back, or spinal cord injuries.

b. There is a second method to quickly doff the vest when time and or urgency is not critical. This method is best utilized for casualty aid in a secure area. Using this method the MTV can be reassembled in a matter of seconds versus a quick release doff as described in (a) above.

1. Simply lift up on the front flap in the lower center of the MTV.
2. Release one side of the Velcro cummerbund.
3. Release the Fastex buckle on the same side that you released the cummerbund.
4. Pull MTV open.

NOTE: There is also a casualty evacuation strap located in the kangaroo pocket above the lower center flap in the front of the MTV. If medical personnel utilize the quick release method of doffing the vest in order to provide aid, the casualty evacuation strap can be utilized to temporarily close the MTV back to a protective

state. Simply route the strap under the casualty and close the MTV. Then weave the end of the strap through the buckle to close.

NOTE: NEED TO ALSO STRESS THE IMPORTANCE OF NOT “BRIDGING” GEAR ACROSS THE SHOULDERS OR ON THE SIDES OF THE CUMMERBUND BECAUSE THIS WILL INTERFERE WITH THE QUICK RELEASE SYSTEM.

ELO #7 Discuss the safety concerns for the MTV.

There are Three risks (2 medium, 1 high) associated with the operation of the MTV.

The first safety concern has previously been mentioned and addresses - failure to detach the Fastex buckle before pulling away the vest in an emergency doff will cause the load of the vest to be shifted up to the neck and may result in serious neck, spine, or back injuries. Hopefully Marines will never have to use the emergency "quick-disconnect" on the MTV, but they all need to know how and get to feel comfortable doing the procedure quickly and in the proper in the emergency doffing sequence.

Again, using the quick release is easy, but since there is usually a heavy load associated with armor platforms, and this load swings down from the body (due to gravity) serious injury could occur if the steps are not followed properly.

WARNING

Failing to detach the Fastex buckle when doffing the MTV will result in the load of the vest transferring up to the neck area causing serious neck, back, or spinal cord injuries. ALWAYS ENSURE THE FASTEX BUCKLE IS DETACHED WHEN DOFFING THE VEST....in routine operations and in emergency doffing operations.

The second safety concern associated with the MTV is proper placement of the ballistic systems. Always ensure that the soft ballistic panels for the Side Plate Pockets are located behind the Hard Armor Insert. The soft armor inserts should be located between the body and the hard armor plate. Also ensure that the other soft armor ballistic inserts are inserted in the proper manner with the labels facing the body. Remember to check the proper positioning of the front and back SAPI plates. This can be manipulated by utilizing the adjustable shoulder straps.

WARNING

FAILURE TO PLACE THE BALLISTIC INSERTS INTO THE MTV CAN CAUSE SERIOUS INJURY OR DEATH IF STRUCK BY A BALLISTIC THREAT.

WARNING

ANY "BRIDGING" OF GEAR ACROSS THE SHOULDERS OR ON THE SIDES OF THE CUMMERBUND WILL INTERFERE WITH THE QUICK RELEASE SYSTEM. IF GEAR IS BRIDGED THE MTV WILL NOT RELEASE AS DESIGNED.

ELO #8 Explain the procedures for cleaning, storing, and transporting the MTV.

Instructor's Note: Point out to the students that all of this information can be found on their individual Wear-Care Card that comes included with each issued MTV. Hold up a copy of this Wear-Care Card and Pass around if necessary.

a. Cleaning

1. For best cleaning results, disassemble MTV components before cleaning.
2. Remove dirt and grease from the outershell by brushing with warm water and mild soap. Use a brush with semi-rigid plastic bristles.
3. DO NOT use a brush with metal bristles.
4. Do not use "CLP", "Dip-tank" solvent or any other "lubricant" to clean or coat the vest. Employment of NBC Deconing solution (concentrated bleach) will spot and eventually weaken the cordura fabric. Continual use of this solution on the pack will eventually cause the material to fail.
5. DO NOT use chlorine bleach. DO NOT put in washing machine. Hang dry. DO NOT put in drying machine, the oven, or subject to the direct exhaust from mechanized vehicles.
6. DO NOT dry clean.
7. DO NOT press. For better results, components may be disassembled before cleaning. Re-assemble when thoroughly dried.
8. Never submerge ballistic inserts into water for cleaning. Always use a sponge or rag, slightly damp, to wipe down ballistic inserts. Never put ballistic inserts into a washing machine. Never leave ballistic inserts in the direct sunlight for prolonged periods of time.
9. Remove from direct sunlight or UV sources. Prolonged periods will deteriorate the material and cause excessive fading.
10. Water exposure. After being exposed to water, the vest should be dried thoroughly before storage. When drying ballistic panels lay flat on the ground

and occasionally flip over. Prolonged exposure to water will accelerate deterioration of the fabric.

11. DO NOT USE IN CHLORINATED SWIMMING POOL FOR TRAINING. THIS WILL RESULT IN A DETERIORATION OF THE SOFT ARMOR.

b. Storing. For all storage procedures, keep the vest out of direct sunlight and extreme heat sources; keep the vest dry. While continued use will take its toll on the vest over time, to help extend the life of the vest, observe the following storage procedures.

1. Always stage/ store an MTV on its back with the ballistic panels flat. Do not store the MTV with the cumerbund closed. This prevents the front and back ballistic panels from becoming damaged on the sides, especially in hot, humid environments.
2. Remove all hard armor inserts and store them on a stable platform. Curved side up and stacked one on top of the other, no higher than 10 plates high.

c. Transporting. For transportation inside containers or cargoholds:

1. Box unloaded MTV's backside facing down, stacking no higher than 10 vests per stack, alternating head to foot. MTV's can be stacked 10 high, but must be alternated using the "head-foot" method.
2. Hard Armor inserts should be packaged separately and boxed. 10 Plates per box and loaded vertically with padding in between each plate.

ELO #9 **Explain the procedures for inspecting and conducting repairs to the MTV.**

The MTV vest has a commercial warranty covering the outershell against manufacturer's faulty workmanship or material deficiencies. However, some MTV's will experience minor breakages over their life times. While most, if not all repairs to the MTV will be done at the point of issuance either the CIFs or, in the case of reserve centers, independent supply sections using capabilities/equipment resident to these sites. Some "field expedient" repairs can be made on the system. For repairing failures in the outershell material or stitching, use a #69 bonded nylon or a higher thread. Additionally, use Seam Grip™, Free Sole™, ShooGoo™ or any other urethane-based sealer to repair tears in the fabric. If these products are not available, use '100mph tape'. Duct tape should only be used if nothing else is available. These are temporary repairs that will need to be properly addressed when facilities become available. Repairs should be left intact when returning the MTV.

If buckles break, replace them with the same type of buckle. If a buckle that is sewn onto the MTV breaks, field expedient bucks that do not require sewing are available.

NOTE: NEVER TRY TO REPAIR BALLISTIC INSERTS (HARD OR SOFT). IF BALLISTIC INSERTS ARE DAMAGED, REPLACE WITH NEWLY ISSUED INSERTS OR A COMPLETELY NEW MTV. USE OF DAMAGED BALLISTICS CAN RESULT IN SERIOUS BODILY HARM OR DEATH.

NOTE: PRIOR TO THE STUDENTS LEAVING CLASS, ENSURE ALL STUDENTS HAVE TRIED ON THEIR MTV, HAVE ALL THE PIECES OF THEIR MTV INTACT, HAVE THE CORRECT SIZED VEST, AND HAVE A COPY OF THE INSTRUCTION CARD.

NOTE: THE MANUFACTURER OF THE MTV HAS SET UP A WEB BASED PORTAL TO ALLOW MARINES TO DOWNLOAD TRAINING INFORMATION, REQUEST TRAINING AND TO SEE WHERE FUTURE TRAINING WILL BE HELD. TO ACCESS THIS SITE GO TO:

WWW.BODY-ARMOR.COM

CLICK ON THE USMC TAB TO VIEW THIS MATERIAL.

NOTE: TWO HELP DESKS HAVE BEEN SET UP (ONE WEST COAST AND ONE EAST COAST) THESE HELP DESK CAN BE CONTACTED FOR ANY REASON (TRAINING REQUEST, PROBLEMS, QUESTIONS)

CONTACT INFORMATION FOR THESE HELP DESKS ARE:

LeJeune

**Tactical Applications Group
POC: Lisa Quinlan or Mike Atoyan
1941 Lejeune Blvd.
Jacksonville, NC 28546
(910)938-4529-Office
Toll Free: 866-391-6110
Local: 910-687-6033**

Pendleton

**POC: Mike Atoyan
3355 Mission Avenue Suite #222
Oceanside, CA 92054
Toll Free: 866-391-7385
Local: 760-994-4842**

Review

In review the MTV is not only a piece of protection this is a tool to be used by the Marine that will allow the Marine to react better to any given mission. Since this gear is more advanced than its predecessors it is necessary to train with the system. It is very important that the first time a Marine uses the quick release is not when a Marine needs to use this feature to save his/her life.

It is necessary for the Small unit leaders of the Marine Corps to train their Marines with this new gear and inspect their gear frequently to ensure proper form, fit and function. Failure to carry out these steps may result in Marines being killed or seriously injured. Failure to train individual Marines will ultimately cause Marines to be killed. No matter how good a system is if the user is not trained and understands the capability, the full value of the system will never be achieved.

MTV Do's and Don'ts

DO

- Always ensure proper fit with neckline of the vest at collarbone. Failure to do heed warning may result in death.
- Always install ESAPI strikeface toward enemy and soft armor against body
- ESAPI and soft armor must be used together
- Always loosen one side of throat guard when traveling over water
- Ensure casualties is covered in body armor during battle, triage and medevac

Don'ts

- Do not bridge front and rear carrier at shoulders with communication cable, hydration tube or other gear
- Do not bridge cummerbund and back carrier flap with MOLLE gear (ie pouches)
- Do not leave gaps at side of vest under cummerbund
- Do not fit front ESAPI plates more than one inch (1") below collarbone
- Do not use MTV in chlorinated swimming pool
- Do not attempt to repair armor. Use of damaged armor can result in serious injury or death

ATTACHMENTS. Parts List.